302. Proposed by PROF. R. D. CARMICHAEL, Anniston, Ala.

Prove that the system of equations

$$xu-5yv=2,$$
$$xv+yu=1,$$

has no integral solution in x, y, u, v except those for which one of the unknowns is zero.

GEOMETRY.

335. Proposed by G. B. M. ZERR, A. M., Ph. D., 4243 Girard Avenue, Philadelphia, Pa.

Determine analytically, the point where three lines in a plane appear of equal length.

CALCULUS.

260. Proposed by V. M. SPUNAR, East Pittsburg, Pa.

A natural equation of a surface may be defined as an equation in which the differential quotients of the principal radius, ρ, of curvature to the element of arc in the direction of the principal curvature are shown as a function of ρ, $\frac{d^n\rho}{ds}=F(\rho)$. Required the natural equation of the whole surface of second power.

261. Proposed by S. A. COREY, Hiteman, Iowa.

Prove that $\sum\limits_{x=1}^{x=\infty}\frac{1}{a+2bx^2+cx^4}=\frac{\pi}{\sqrt{[8ac(\sqrt{ac}+b)]}}-\frac{1}{2a}$, where $ac>b^2$.

262. Proposed by H. SCHAFFER, Fayetteville, Ark.

Prove that the circle is the only plane curve of constant curvature.

MECHANICS.

217. Proposed by G. B. M. ZERR, A. M., Ph. D., 4243 Girard Avenue, Philadelphia, Pa.

Given, the mean distance from earth to sun, 1.49×10^{15} centimeters; radius ef the earth, 6.37×10^8 centimeters; velocity of the earth in its orbit, 2.96×10^6 centimeters per second; velocity of rotation of a point on the equator, 4.63×10^4 centimeters per second; mass of the earth, 6.14×10^{27} grams; find (1) the total energy of the earth in ergs; (2) the angular velocity of the earth on its axis; and (3) the angular velocity of the earth around the sun.

218. Proposed by W. J. GREENSTREET, M. A., Editor of The Mathematical Gazette, Stroud, England.

Cut a uniform, circular cylinder by two planes whose line of intersection is without the cylinder. The centroid G of the surface of the portion of the cylinder thus cut off lies in a plane elliptic section, in which plane also lies the line of intersection aforesaid. C is the center of the ellipse, and the pole of the intersection line with reference to this ellipse is X. Show (1) that C, X, and G are collinear, and (2) that $XC=2CG$.